

served to be associated by cords of protoplasm extending between the bodies of the animals, as seen in *Rhaphidiophrys elegans*. The individuals associated together were of two kinds, those which were active, and a smaller proportion which were in an encysted quiescent condition.

The active individuals resembled the common sun-animalcule. The body was usually spherical or oval, but variable from contraction, colourless, granular, and vesicular, with a large central nucleus more or less obscurely visible and variably granular, with three or four or more peripheral contractile vesicles. The body had a thick envelope of delicate protoplasm, with innumerable and immeasurably fine straight spicules. The envelope with the spicules extended in numerous conical rays, from which proceeded numerous immeasurably fine granular rays. The encysted individuals presented the same essential constitution, except that the body was regularly spherical, enclosed by a structureless envelope or membrane, contained no contractile vesicles, and the enveloping protoplasm was devoid of granular rays. The body of the active individuals measured from 0.024 to 0.036 millim. in diameter; in the encysted individuals usually about 0.02 millim. An active individual, with the body 0.033 millim. in diameter, with its envelope was 0.055 millim. in diameter. An encysted individual, with the body 0.02, with its envelope was 0.036 millim.

The active individuals were observed to feed on two species of minute monads, which were swallowed in the same manner as in *Actinophrys*. After some hours a few individuals appear to have separated from the surface of one of the groups; but they were as stationary and sluggish as when in association with others.

The species is apparently distinct from others which have been previously noticed, and may be named *Rhaphidiophrys socialis*.—*Proc. Acad. Nat. Sci. Phil.*, April 1883, p. 95.

On the Genus Hyliota. By GRACEANNA LEWIS.

By a letter of inquiry from Prof. G. Hartlaub, M.D., of Bremen, Germany, concerning some rare African birds of the genus *Hyliota*, attention has been drawn to the specimens now in this Academy, of which there are three, all of them being male birds.

The question at issue is whether there are two distinct species or only one; and as distinguished authorities differ on this point, it seems proper to offer to ornithologists the testimony which these specimens afford.

The genus was first characterized by Swainson, who described the species *H. flavigastera*. The bird was at first supposed to belong to India, but was subsequently found to inhabit N.E. Africa and Senegambia, and was for a long time the only known species of the genus. Our specimen agrees moderately well with Swainson's description, but is, no doubt, an immature male; the wings are brownish and are not edged with glossy purple, but instead with a dull greyish white. The two external pairs of tail-feathers are edged more or less with white, as in the female. The band of white on

the wing is formed largely by the middle and greater coverts, and, beginning nearly at the outer edge of the wing, continues obliquely across the roots of the primaries, secondaries, and tertials, meeting on the back with the white of the rump, so as to form a deep curve over the folded wings and back. The white on the wing is even more extensive than is apparent. On lifting the overlying dark plumage, this colour is seen to involve nearly all the upper portion of the wing, the internal surface of which, as well as the axillaries, are white. The outer greater coverts are white at the base, but are black glossed with green on their margins; on the external feather the black is so reduced as to leave only a border on a white ground. The whole upper plumage of the head and back as far as the rump is of deep blue-black with glossy steel-blue reflections.

In 1851, J. and E. Verreaux described in the *Rev. et Mag. de Zool.*, p. 308, a second species, *Muscicapa(?) violacea*. In the same year, H. E. Strickland brought home from the river Gaboon a specimen which he described in Jardine's 'Contributions to Ornithology,' 1851, p. 132, under the name of *Hyliota violacea*, after having had the opportunity of consulting the manuscript of Verreaux, to which he refers. He remarks as follows:—"This bird is interesting as affording a second species of a genus of which one specimen only, the *H. flavigastra*, Swains., of Senegal, was hitherto known. It much resembles *H. flavigastra*, but differs in its broader beak and the less extent of white on the wing. Whole upper parts black with a steel-blue gloss, of a rather more purple hue than in *flavigastra*. Three or four of the greater wing-coverts next the body are white (in *flavigastra* the whole of the middle, and the basal half of the greater coverts are white). Lower parts pale cream-colour.

"Total length 5 inches; beak to front .5, to gape .7, broad .2½; wing .3; medial rectrices .1 and .9, external .2; tarsus .7."

Of *Hyliota violacea*, as above described, the Academy possesses two specimens. One is the identical bird on which the species was founded by Verreaux; and its characters agree with the description of that author, as well as with that of Strickland, and also with that to be found in Hartlaub's 'Ornithologie Westaflicas,' Bremen, 1857, p. 98.

The second specimen in possession of the Academy belongs to the Du Chaillu 1st Coll., and is also from the river Gaboon. This bird is mentioned in Cassin's 'Catalogue,' Proc. Acad. of Nat. Sciences, 1869, p. 51; but no description is given. Essentially its characters are the same as those of the type specimen of Verreaux.

In this species the only white to be seen on the whole wing is on one single feather belonging to the *inner* portion of the greater coverts. There are really about five feathers belonging to the series of ornamental coverts; but they overlie each other, and are so disposed that in the closed wing only one of them is visible.

The rump in both species is covered with long, loose, silky feathers, of a white or greyish-white colour from the base to near the tip, when the feather suddenly becomes dark and at the same time

pennaceous in structure. The only difference between the two species appears to be in the depth of the dark margin, or its entire absence in mature specimens of *H. flavigastera*. In Swainson's description of the type the rump is given as pure white; but it is not so in our specimen. The pennaceous dark border is nearly as deep as in *H. violacea*; so that this character cannot be relied upon as a distinction between the two species.

In his 'Ornithology of Angola,' p. 190, Prof. Barboza du Bocage acknowledges the receipt from M. Anchieta of one specimen of *H. violacea*. The description is that of a bird with a large amount of white on the wing. The description does not resemble the type specimen of Verreaux, but is much more nearly like *H. flavigastera*, Swains.

Depending on this description, R. Bowdler Sharpe gives it in his 'Catalogue of the Birds in the Collection of the British Museum,' instead of that of Verreaux, and, in consequence, considers *H. violacea* a doubtful species.

With the privilege of examination of the type, and of comparing this with the Du Chaillu specimen and the descriptions of Verreaux, Strickland, and Hartlaub, it seems impossible to suppose that the specimen sent by M. Anchieta to Prof. Bocage was that of a true *violacea*, but was either *H. flavigastera* or a form intermediate between the two.

The striking differences between the two species are:—the blue-black plumage in the upper parts in *flavigastera*, and the violet-black of *violacea*; the broad bands of white on the wing of the former, and the concentrated spot on that of the latter; the darker shade of the underparts in *flavigastera*; and the white thighs of the one and the black of the other, together with the larger size of *violacea*. They also inhabit different regions—*flavigastera* belonging to the N.E. of Africa and Senegambia, while *violacea* is found southward from the Gaboon to Benguela in West Africa.

Swainson points out the general resemblance of *Hyliota* to the African todies of the genus *Platystira*, and to the Old-world flycatchers of *Muscicapa*, with a bill so much lengthened and compressed on the sides that at first sight it might be mistaken for a *Sylvia*.

It also agrees with *Muscicapa* and *Cryptolopha* in having the base of the bill broad and depressed as far as the nostrils and then compressed to the extremity, the bill being so much lengthened in *Hyliota* that it becomes the tenuirostral form of the group to which it belongs.

The glossy blue-black plumage, white wings, and buff throat are in unison with related flycatchers. By the rump-feathers Swainson detects an analogy with the caterpillar-catchers of the Ceblypyrinæ.

In *Hyliota* the sexes differ remarkably in colour, as they do also in *Platystira*, such difference not being the rule in the family of the Muscipidæ. *Hyliota* agrees with the flycatchers in general by its small and weak feet and its syndactyle toes, the outer being connected with the middle as far as the first joint. The wings and tail are those of *Muscicapa*, in which group *Hyliota* is placed by ornithologists.—*Proc. Acad. Nat. Sci. Philad.*, June 12, 1883, p. 129.